

What Is Claimed Is:

1. A speed controller for motor vehicles having an input device (12, 14, 18) for the input of a desired speed V_{set} by the driver, and having a plurality of operating modes (ACC, S&R) which are able to be activated in different speed ranges and differ in their functional scope, a change in the operating mode, which results in the loss of a safety-relevant function, being only possible by a command of the driver, characterized by a decision unit (24), which, in the light of predefined criteria, decides whether a change in the desired speed V_{set} , which is input by the driver, is to be interpreted as a command for changing the operating mode.
2. The speed controller as recited in Claim 1, characterized by a display device (28, 30) for displaying the operating mode.
3. The speed controller as recited in Claim 1 or 2, characterized by a signal device (32) which signals to the driver a change in the operating mode.
4. The speed controller as recited in one of the preceding claims, wherein one of the operating modes (ACC) is an operating mode for higher vehicle speeds that is able to be activated only above a limiting speed (V_s ; V_{ACCmin}), and another operating mode (S&R) is an operating mode for lower vehicle speeds which has a function for the automatic braking of the vehicle to a standstill and is able to be activated in a speed range whose upper limit is at least equal to the limiting speed (V_s ; V_{ACCmin}).
5. The speed controller as recited in Claim 4, wherein the decision unit (24) automatically causes a change from the mode (ACC) for higher speeds into the mode (S&R) for lower speeds when the speed of the vehicle decreases to below the limiting speed (V_s ; V_{ACCmin}), and then

automatically limits the desired speed (V_{set}) to a value (V_s ; V_{SRset}) permissible for the new mode.

6. The speed controller as recited in Claim 4 or 5, wherein the decision unit (24) automatically causes a change from the mode (ACC) for higher speeds into the mode (S&R) for lower speeds when the desired speed (V_{set}) is lower than the limiting speed V_s and, in addition, the actual speed (V) of the vehicle is less than $V_s + h_1$, h_1 having a non-negative value.
7. The speed controller according to one of Claims 4 through 6, wherein the decision unit (24) automatically causes the change from the mode (ACC) for higher speeds into the mode (S & R) for lower speeds when the desired speed (V_{set}) is increased to a threshold value which is at least equal to the limiting speed (V_s), and when then the actual speed (V) of the vehicle does not then increase at least to the limiting speed within a predefined time interval.
8. The speed controller according to one of Claims 4 through 7, wherein the decision unit (24) automatically causes the change from the operating mode (S&R) for lower speeds into the operating mode (ACC) for greater speeds when the desired speed is increased by the driver to a value that is greater than $V_s + h_1$, V_s being the limiting speed and h_1 having a non-negative value.
9. The speed controller according to one of Claims 4 through 8, wherein the decision unit (24) deactivates the speed controller when, in the operating mode (S&R) for lower speeds, the desired speed (V_{set}) is less than or equal to the limiting speed (V_s) and the actual speed (V) is greater than a threshold value ($V_s + h_2$), which, in turn, is greater than the limiting speed (V_s).
10. The speed controller as recited in Claim 5,

wherein the decision unit (24) deactivates the speed controller when in operating mode (S&R) for lower speeds the speed of the vehicle increases, and the driver does not enter a new desired speed, while the actual speed of the vehicle lies within a predefined speed range.

11. The speed controller as recited in one of Claims 4 through 10,
wherein the decision unit (24) activates the speed controller in the mode (ACC) for greater speeds when, upon the input of the desired speed the actual speed of the vehicle is greater than a predefined limiting speed (V_s , V_{select}); and the decision unit (24) activates the speed controller in the mode (S&R) for lower speeds and limits the desired speed when, upon the input of the desired speed, the actual speed (V) of the vehicle is less than or equal to the predefined limiting speed (V_s , V_{select}).
12. The speed controller as recited in Claim 11,
wherein the decision unit (24) only activates the speed controller in the mode (S&R) for lower speeds when, in addition, a target object is located by a distance sensor system (20, 22) and the distance to this target object lies within a predefined range.
13. The speed controller as recited in Claim 12,
wherein the decision unit (24) automatically deactivates the speed controller in the mode (S&R) for lower speeds when the target object gets lost and is not found again within a predefined time span (T_1).
14. The speed controller as recited in Claim 12 or 13,
wherein the decision unit (24) automatically deactivates the speed controller in the mode (S&R) for lower speeds when the distance from the target object becomes greater than a predefined value (d_{SROff}).